



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,299	09/27/2001	Nikolay V. Erukov	HUK-2003-1	5037

7590 12/04/2003  
RONALD & CORNELL  
4901 Cremshaw Court  
Raleigh, NC 27614

EXAMINER

MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
----------	--------------

1723

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/966,299

Applicant(s)

ERUKOV ET AL.

Examiner

Krishnan S Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☒ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Claims 1-20 are pending, of which 13-20 are withdrawn from consideration.

#### ***Election/Restrictions***

Applicant's election with traverse of Claims 1-12 in Paper of 7/31/03 is acknowledged. The traversal is on the ground(s) that the inventions are not distinct from one another. This is not found persuasive because:

The three groups identified for restriction under 35 U.S.C. 121 are:

- I. Claims 1-12, drawn to method of making filter elements, classified in class 425, subclass 113.
- II. Claims 13-19, drawn to apparatus for continuous extrusion of filter element, classified in class 425, subclass 376.1.
- III. Claim 20, drawn to filter element, classified in class 210, subclass 510.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed is a single screw extruder that can be used to practice other and materially different processes, like making ceramic or plastic filters, tubes or pipes.

Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case that the process as claimed can be used to make other and materially different product, such as carbon pipes or tubes, and the product could be made by injection molding.

Inventions II and III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case that the apparatus as claimed is an extruder, which not an obvious apparatus for making the product and can be used for making other different products such as ceramic and plastic pipes and tubes. The product can also be made by injection molding.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

In response to applicant's argument that inventions I and III are not distinct, it may please be noted, as detailed in the restriction requirement, that invention I belongs to a process and III belongs to a product. They fall in different classification. The process

can be used for making a materially different product like a pipe or a tube. The product can be made by a different process like molding. Therefore, the two inventions are distinct, and the restriction is proper.

In response to applicant's argument that invention I and II are not distinct, it may please be noted that invention I and II are related as process and apparatus. The examiner believes that the single screw extruder as claimed in group II can be used for making other extruded products like pipes and tubes; and the two inventions fall in different classification. Therefore, the two inventions are distinct, and the restriction is proper.

In response to applicants' argument that inventions II and III are not distinct, it may be noted that the inventions are related as apparatus and product made. Since the apparatus as claimed has many different other uses as described above, and the two inventions fall in different classes, the restriction is proper.

The requirement is still deemed proper and is therefore made FINAL.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Russian Federation on 9/29/00 and 8/10/01. It is noted, however, that applicant has not filed a certified copy of both of the Russian applications as required by 35 U.S.C. 119(b).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitations "molded structure" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: Claims 1 recites heating the mixture in the barrel and then molding the mixture into a porous element [in the barrel?], and cooling the porous element. Then the improvement step recites, "... removing the mixture from the discharge end of the extruder". The claim reads as if the formation of the porous element and cooling it takes place in the barrel; therefore, how would the mixture come out of the extruder barrel? The specification reads that the formation of

the porous element and cooling it takes place outside the barrel, in the extrusion head, which is not recited in the claim.

Claim 12 recites the limitation activated carbon fibers, which has no antecedent basis in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-3 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (US 5,976,432) in view of Hughes et al (US 6,267,887 B1) and Barboza et al (US 5,783,011).

Yang teaches a method of making a filter element comprising activated carbon and polymeric binder by extrusion as in claim 1, but does not teach the filter as being a porous structure having increasing density from periphery to the center. Hughes teaches a depth filter with activated carbon and binder and having fibrous material to develop the porous structure for the depth filter (see fig 2 for flow path of depth filter 3; col 6 lines 29-45). Now, Hughes does not specifically teach the depth filter as having a density gradient in the direction of flow (or periphery to center). However, it is known that depth filters have an increasing density gradient as taught by Barboza, col 1 lines 10-20. Hughes has direction of flow from periphery to center as seen in Fig 2. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching

of Hughes in the process of Yang to make a depth filter using activated carbon and binder.

Claim 2, 6 and 8: some of the polymeric binder is introduced as fibers as in claim 2, mixture of fibers as in claim 6 and powder and fiber polymers for the binder as in claim 8: Hughes teaches having a (any) fibrous material to make the depth filter. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention that binder material as fibers would be equivalent because, the prior art element performs the identical function specified in the claim in substantially the same way, and produces substantially the same results as the corresponding element disclosed in the specification. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)

Claim 3: the mixing and degree of agitation of the carbon and the binder is as taught by Yang (col 4 line 44- col 5 line 20).

Claims 7 and 9: binder is of two different polymers with melting point differing at least by 10 C as in claim 7 and powder having lower melting point than the fiber as in claim 9: Hughes teaches using a fiber material to obtain the depth filter. It would be obvious to one of ordinary skill in the art at the time of invention that at least one fiber material must have a higher melting point to stay as fibers in the mix to obtain the depth filter. The difference in the melting point is a result-effective variable that could be optimized. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch and Slaney*, 205 USPQ 215



(CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955).

Claim 10: the polymeric binder comprises polyethylene (Yang col 4 lines 44-46).

Claims 11 and 12: The fibrous polymeric binder or the activated carbon fiber length to diameter ratio is also a result effective variable (In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955).)


### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon  
Patent Examiner

  
W. L. WALKER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700